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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,391	11/26/2001	Rongfu Xiao	2328P	1779

7590 10/03/2003
SAWYER LAW GROUP LLP
P.O. Box 51418
Palo Alto, CA 94303

EXAMINER	
LAVARIAS, ARNEL C	
ART UNIT	PAPER NUMBER

2872

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/995,391

Applicant(s)

XIAO, RONGFU

Examiner

Arnel C. Lavarias

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) 2-5 and 16-59 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-15, 61-62 is/are allowed.
- 6) ☒ Claim(s) 1 and 60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. After a further review of the claims, the restriction requirement in Paper No. 3, dated 4/16/03, is withdrawn, and a new restriction requirement is being issued to correct minor deficiencies in Invention II, Species 1 and 2 of the restriction requirement in Paper No. 3.
2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 2-5, drawn to the particulars of a switching rotator, including a switchable Faraday rotator, a ferrite core, and electric core surrounding the ferrite core, classified in Class 359, subclass 484.
 - II. Claims 6-62, drawn to various embodiments of a magnetooptic switch, systems comprising the magnetooptic switch, and a method for switching an unpolarized light, classified in Class 359, subclass 246.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the various embodiments of the magnetooptic switch (i.e. the combination) do not include the particulars of the switching rotator (i.e. the

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subcombination). The subcombination has separate utility such as in optical isolators and optical light feedback rejection in diode and solid state lasers.

4. Claim 1 link(s) inventions I and II. The restriction requirement between the linked inventions is subject to the nonallowance of the linking claim(s), Claim 1. Upon the allowance of the linking claim(s), the restriction requirement as to the linked inventions shall be withdrawn and any claim(s) depending from or otherwise including all the limitations of the allowable linking claim(s) will be entitled to examination in the instant application. Applicant(s) are advised that if any such claim(s) depending from or including all the limitations of the allowable linking claim(s) is/are presented in a continuation or divisional application, the claims of the continuation or divisional application may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.
5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
6. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

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7. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

8. This application contains claims directed to the following patentably distinct species of the claimed invention:

Applicant is required to elect one of the following species if election is made to

Invention II:

Species 1: Figure 5.

Species 2: Figure 7.

Species 3: Figure 9.

Species 4: Figure 13.

Species 5: Figure 15.

Species 6: Figure 16.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, Claim 60 is generic to Species 1-6 of Invention II.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

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9. The claims are deemed to correspond to the species listed above in the following manner:

Species 1: Claims 6-15, 61-62.

Species 2: Claims 6, 8-9, 16-25.

Species 3: Claims 26-46.

Species 4: Claims 47-57.

Species 5: Claim 58.

Species 6: Claim 59.

10. Applicant's election of Invention II, Species 1, Claims 1, 6-15, 60-62 in Paper No. 5, dated 7/16/03, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

11. Claims 2-5, 16-59 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected invention and species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5, dated 7/16/03.

Specification

12. The disclosure is objected to because of the following informalities:

Page 1, line 12- 'dependent' should read 'dependence'

Page 5, line 22- 'hesteresis' should read 'hysteresis'

Page 7, line 13; Page 9, line 16- 'illustrates' should read 'illustrated'

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Page 12, line 18; Page 15, line 5; Page 16, line 7- '1' should read '1''

Page 15, line 19- 'it' should read 'its'

Page 16, line 14- 'comprises' should read 'comprised'.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Umezawa et al. (U.S Patent No. 5521741).

Umezawa et al. discloses a switching rotator (See for example Figure 1, 4-5, 7, 13-16) comprising a switchable Faraday rotator (See for example 16 in Figure 1); a ferrite core surrounding the Faraday rotator (See for example 10 in Figure 1); and an electric coil surrounding the ferrite core (See for example 12 in Figure 1), wherein a direction of a current supplied to the electric coil determines a direction of rotation of a polarization of a light traversing through the Faraday rotator (See col. 4, line 62-col. 5, line 67).

15. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Shirasaki (U.S. Patent No. 5982539).

Shirasaki discloses a switching rotator (See Figure 5) comprising a switchable Faraday rotator (See 401 in Figure 5); a ferrite core surrounding the Faraday rotator (See 403 in Figure 5); and an electric coil surrounding the ferrite core (See 403 in Figure 5), wherein a direction of a current supplied to the electric coil determines a direction of rotation of a polarization of a light traversing through the Faraday rotator (See Figure 2; Abstract; col. 4, line 35-col. 6, line 3).

16. Claims 1 and 60 are rejected under 35 U.S.C. 102(b) as being anticipated by Jin et al. (U.S. Patent No. 5627924, or Jin '924).

Jin '924 discloses a switching rotator and a method for switching an unpolarized light (See Figures 2-5), comprising the steps of splitting the unpolarized light (See for example 23 in Figures 2-5) into a first sub-beam (See for example upper beam in element 23 in Figures 3, 5) with a first polarization direction and a second sub-beam (See for example lower beam in element 23 in Figure 3, 5) with a second polarization direction; rotating either the first or the second sub-beam (See for example 25, 26, 28, 271, 272 in Figures 2-5), such that the polarization directions of the first and second sub-beams are parallel (See 24 in Figures 2-5; col. 3, lines 45-55), wherein the rotating is performed by a switching rotator (See for example 25, 26, 26, 271, 272 in Figures 2-5; Figure 6), wherein the switching rotator comprises a switchable Faraday rotator (See 28 in Figures 2-5; 281 in Figure 6) for rotating the polarization direction of the first and second sub-beams, a ferrite core surrounding the switchable Faraday rotator (See 25, 26 in Figures 2-5; 251, 261 in Figure 6), and an electric coil (See 271, 272 in Figure 2-5) surrounding the ferrite core, wherein a direction of a current supplied to the electric coil determines a direction

of rotation of the polarization of the first and second sub-beams (See col. 3, lines 45-67); displacing the first and second sub-beams (See beams in element 23, 30, 33 in Figures 2-5); combining the first and second sub-beams in the unpolarized light (See beams in element 33 in Figures 2-5); and outputting the unpolarized light either at a first output port or a second output port based upon the direction of the current supplied to the electric coil (See 221, 222 in Figures 2-5).

17. Claims 1 and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Jin et al. (U.S. Patent No. 6577430, or Jin '430).

Jin '430 discloses a switching rotator and a method for switching an unpolarized light (See for example Figures 2-3), comprising the steps of splitting the unpolarized light (See for example 12 in Figure 2) into a first sub-beam with a first polarization direction and a second sub-beam with a second polarization direction (See for example the two beams in element 12 in Figure 2); rotating either the first or the second sub-beam (See for example 14, 15 in Figures 2-3), such that the polarization directions of the first and second sub-beams are parallel, wherein the rotating is performed by a switching rotator (See for example 14 in Figure 2; Figure 1), wherein the switching rotator comprises a switchable Faraday rotator (See garnet in 14A of Figure 1) for rotating the polarization direction of the first and second sub-beams, a ferrite core surrounding the switchable Faraday rotator (See ring surrounded by coil in 14A of Figure 1), and an electric coil (See coil in 14A of Figure 1) surrounding the ferrite core, wherein a direction of a current supplied to the electric coil determines a direction of rotation of the polarization of the first and second sub-beams (See col. 4, line 8-col. 6, line 57); displacing the first and second sub-beams

(See beams in element 12, 13 in Figure 2; 18 in Figure 3); combining the first and second sub-beams in the unpolarized light (See beams in element 13 in Figure 2); and outputting the unpolarized light either at a first output port or a second output port based upon the direction of the current supplied to the electric coil (See 2, 3 in Figure 2).

Allowable Subject Matter

18. Claims 6-15, 61-62 are allowed.

19. The following is a statement of reasons for the indication of allowable subject matter:

Claims 6, 61, and 62 are allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a magneto-optic switch and a system including one or more magneto-optic switches; the switch and the system including a first and a second latched rotator optically coupled to the polarization beam splitter at a side opposite to the at least one input port, the first output port, and the second output port; a Wollaston prism optically coupled to the Faraday rotator of the switching rotator at a side opposite to the first and second latched rotators; and a reflector optically coupled to the Wollaston prism at a side opposite to the switching rotator, wherein the reflector reflects light back through the Wollaston prism, the switching rotator, the first and second rotators, and the polarization beam splitter.

Umezawa et al., Jin '924, Jin '430, and Shirasaki all fail to teach or reasonably suggest, in particular, a first and a second latched rotator optically coupled to the polarization beam splitter at a side opposite to the at least one input port, the first output port, and the second output port. Further, the embodiments disclosed by Umezawa et al.,

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Jin '924, Jin '430, and Shirasaki are all transmissive-type switching systems, and not reflective-type switching schemes, and hence also lack a reflector optically coupled to an optical element at a side opposite to the switching rotator.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5724165 to Wu.

Wu is being cited to evidence a reflective-type switching system (See for example Figure 4-6) utilizing a Faraday rotator. However, the systems lack specifics on the Faraday rotator, as well as a first and a second latched rotator optically coupled to the polarization beam splitter at a side opposite to the at least one input port, the first output port, and the second output port, and a Wollaston prism optically coupled to the Faraday rotator of the switching rotator at a side opposite to the first and second latched rotators.

U.S. Patent No. 5321774 to Barnard et al.

Barnard et al. is being cited to evidence a reflective-type switching system (See for example Figure 4) utilizing a Faraday rotator. However, the system lacks a second independent output port, specifics on the Faraday rotator, a first and a second latched rotator optically coupled to the polarization beam splitter at a side opposite to the at least one input port, the first output port, and the second output port, and a Wollaston prism

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optically coupled to the Faraday rotator of the switching rotator at a side opposite to the first and second latched rotators.

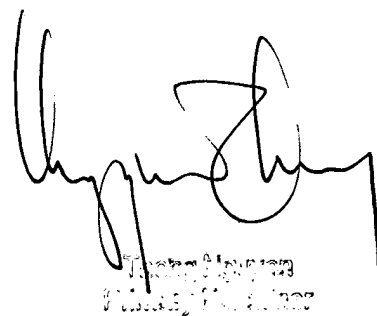
21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
9/16/03



Drawn Dunn
9/16/03